Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this Application:

Listing of Claims:

1. (Currently amended) A shaped solid dosimeter device ~~fabricated from~~comprising:

a transparent or translucent polymer; ~~and~~

one or more reporter ~~molecules~~ compounds; and

one or more activators dispersed within said device, said translucent polymer formed into a three-dimensional shape to provide a three-dimensional dosimetric map.

2. (Original) The device of claim 1 wherein said transparent or translucent polymer is an optical plastic.

3. (Original) The device of claim 2 wherein said optical plastic is selected from the group consisting of acrylic, polystyrene, polyacetal, cyclic olefin copolymer, polycarbonate, epoxy resin, silicone, siloxane, polymethylpentene, polyester, polysulfone, and polyurethane, copolymers and blends thereof.

4. (Currently amended) The device of claim 1 wherein the one or more ~~reporters~~ reporter compounds are selected from the group consisting of spiropyrans, spirothiopyrans, spironapthooxazines, spirobenzopyrans, spiroindolobenzopyrans, chromenes, 2,2,-dichlorchromenes, leuco quinines, anthroquinone dyes, thiazine leuco dyes, oxazine leuco dyes, phenazine leuco dyes, monoarylmethane phthalides, diarylmethane phthalides, triarylmethane phthalides, monoheterocyclic phthalides, bisheterocyclic phthalides, alkenylphthalides, bridged phthalides, bisphthalides, diarylmethanes, triarylmethanes, triarylmethane lactones, fluoran leuco dyes, and tetrazolium salts.

5. (Currently amended) The device of claim 1 wherein the one or more ~~reporters~~ reporter compounds are spiropyran, thiazine, oxazine, phenazine, phthalide, tetrazolium salt, diacetylene, triarylmethane, triarylmethane lactone, or fluoran.

6. (Original) The device of claim 1 wherein the reporter is triarylmethane.

7. (Original) The device of claim 1 wherein the reporter compound is

triarylmethane lactone.

8. (Original) The device of claim 1 wherein the reporter compound is fluoran.

9. (Canceled).

10. (Currently amended) The device of claim ~~9~~ 1 wherein the one or more activators are selected from the group consisting of α-hydroxy alkylphenones, acyl phosphine oxides, O-acyl-α-oximinoketones, organic peroxides, phenylgyoxylates, desylarylsulfides, phenyl phenacylsulfides, metallocene derivatives, transition-metal carbonyls, α-amino acids, halogenated hydrocarbons, polyhalogenated hydrocarbons, alkoxyamines, azoalkane derivatives, diazonium salts, diaryliodonium salts, triarylsulfonium salts, dialkylphenacylsulfonium salts, ferrocenium salts, α-sulfonyloxyketones, and silyl benzyl ethers, benzoin ethyl ether; benzoin isopropyl ether; benzoin butyl ethers (isomeric) ; benzoin isobutyl ether; benzildimethyl ketal; 2,2-diethoxy-1,2-diphenylethanone; 1,1-diethoxyactophenone; 1,1-di(n-butoxy)actophenone; 1-hydroxy-cyclohexyl-phenyl ketone; 2-hydroxy-2-methyl-1-phenyl-propan-1-one; 1-[4-(2-hydroxyethoxy)phenyl]-2-hydroxy-2-methyl-propan-1-one; benzophenone; 2-methyl-1-[4-(methylthio)phenyl]-2-morpholino-propane-1-one; 2-benzyl-2-dimethylamino-1-(4-morpholinophenyl)-butan-1-one; 2,4,6-trimethylbenzoyl-diphenylphosphine oxide; 2,4,6-trimethylbenzoyl-phenylphosphinic ethyl ester; bis(2,4,6-trimethylbenzoyl)-phenylphosphine oxide; bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentylphosphine oxide; 2,2,2-trichloro-1-[4-(1,1-dimethyl)phenyl]-ethanone; 2,2-dichloro-1-(4-phenoxyphenyl)-ethanone; 4,4'-bis(chloromethyl)benzophenone; phenyl tribromomethylsulfone; methyl benzoyl formate; 2,4,6-rimethylbenzophenone; 4-methylbenzophenone; 4-chlorobenzophenone; 4-(4-methylphenylthio)benzophenone; 3,3'-dimethyl-4-methoxybenzophenone; methyl 2-benzoylbenzoate; 4-phenylbenzophenone; 4,4'-bis(dimethylamino)benzophenone; 4,4'-bis(diethylamino)benzophenone; 2-chlorothioxanthone; 4-chlorothioxanthone; 2-isopropylthioxanthone; 4-isopropylthioxanthone; 2,4-dimethylthioxanthone; 2,4-diethoxythioxanthone; 1-chloro-4-propoxythioxanthone; benzil; 1,7,7-trimethyl-bicyclo[2.2.1]heptane-2,3-dione; 2-ethylanthraquinone; 4-benzoyl-N,N,N-trimethylbenzene methaminium chloride; 2-hydroxy-3-(4-benzoylphenoxy)-N,N,N,-trimethyl-1-propaniminium chloride; 2-hydroxy-3-(3,4-dimethyl-9-oxo-9H-thioxanthon-2-yloxy)-N,N,N-trimethyl

propaniminium chloride; 4-(13-acryloyl-1,4,7,10,13-pentaoxatridecyl)benzophenone; 4-benzoyl-N,N-dimethyl-N-[2-(1-oxo-2-propenyl)oxy]ethyl benzenemethaminium chloride; methyldiethanolamine; triethanolamine; ethyl 4-dimethylaminobenzoate; 2-n-butoxyethyl 4-(dimethylamino)benzoate; isoamyl 4-dimethylaminobenzoate; 2-(dimethylamino)ethyl benzoate; tetrachloroethane; carbon tetrachloride; chloroform; dichloromethane; methylene chloride; 1,4-dichloro-2-butene; 2,2'-azobis(isobutyronitrile); 4,4'-azobis(4-cyanovaleric acid); 1,1'-azobis(cyclohexanecarbonitrile); 2,2'-azobis(2-methylpropane), 1,1-dichloropropane; 1,2-dichloropropane; 1,3-dichloropropane; 2,4,5-trichloroimidazole; 2,2-dichloropropane; 1,2-dichlorobutane; 1,3-dichlorobutane; 1,4-dichlorobutane; 1,1,1-trichloroethane; 1,2,2-trichloroethane; 1,2,3-trichloropropane; 1,1,1,2-tetrachloroethane; 1,1,2,2-terachloroethane; bromoform; methylene bromide; dibromomethane; 1,1-dibromo-2,2-bis(chloromethyl)cyclopropane; 1,2-dibromobutane; 1,3-dibromobutane; 1,4-dibromobutane; 2,3-dibromobutane; 1,4-dibromo-2,3-butanedione; 1,4-dibromo-2-butene; 1-bromo-4-chlorobutane; 1-bromo-2-chloroethane; 1-bromo-6-chlorohexane; bromochloromethane; 1-bromo-5-chloropentane; 1-bromo-3-chloropropane; 2-bromo-1-chloropropane; 1,1,2-tribromoethane; 2,4,5-tribromoimidazole; 1,2,3-tribromopropane; bromodichloromethane; chlorodibromomethane; α-(trichloromethyl)benzyl acetate; diphenyliodonium hexafluorophosphate; 4-methylphenyl-4'-isobutryl iodonium hexafluorophosphate; and ferrocene.

11. (Original) The device of claim 1 wherein the one or more activators are an organic peroxide, a halogenated hydrocarbon, or an azo compound.

12. (Original) The device of claim 1 wherein the activator is a halogenated hydrocarbon.

13. (Original) The device of claim 1 wherein the activator is selected from the group consisting of chloroform, dichloromethane, carbon tetrachloride, trichloroethane, and tetrachloroethane.

14. (Original) The device of claim 1 further comprising a UV stabilizer dispersed within the device selected from the group consisting of benzophenones, phenolics, thiopropionates, trialkyl phosphites, triaryl phosphites, benzoates, benzotriazoles, cyanoacryates,

organonickel compounds, organozinc compounds, diphenyl acrylates, cinnamates, and hindered amines.

15. (Original) The device of claim 1 further comprising a UV stabilizer dispersed within the device selected from the group consisting of benzotriazoles and hindered amines.

16. (Canceled).

17. (Canceled).

18. (Canceled).

19. (Canceled).

20. (Canceled).

21. (Canceled).

22. (Canceled).

23. (Canceled).

24. (Canceled).

25. (Canceled).

26. (Canceled).

27. (Canceled).

28. (Canceled).

29. (Canceled).

30. (Canceled).

31. (Canceled).

32. (Canceled).

33. (Canceled).

34. (Canceled).

35. (Canceled).

36. (Canceled).

37. (Canceled).

38. (Currently amended) A method for detecting radiation comprising;

~~a.~~a) subjecting a shaped solid dosimeter to a radiation field, said dosimeter ~~fabricated from~~ comprises a transparent or translucent polymer and one or more reporter ~~molecules~~

compounds, and one or more activators dispersed within said ~~device~~dosimeter, and

~~b.~~b) analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said ~~dosimeters~~dosimeter using a tomographic process.

39. (Original) The method of claim 38 wherein the radiation is ionizing radiation.

40. (Original) The method of claim 38 wherein the radiation is x-ray radiation.

41. (Original) The method of claim 38 wherein the radiation is neutron radiation.

42. (Original) The method of claim 38 wherein spectrophotometric analysis is used in the step b.

43. (Canceled).

44. (Currently amended) The method of claim ~~43~~ 38 wherein said tomographic process comprises the steps of;

~~d.~~c) illuminating said dosimeter with a light source;

~~e.~~d) detecting light from said dosimeter; and

~~f.~~e) processing said detected light to construct a three dimensional image.

45. (Currently amended) ~~The method of claim 44 further comprising the step~~ A method for detecting radiation comprising the steps of;

a) subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter,

b) analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeters using a tomographic process

c) illuminating said dosimeter with a light source;

d) detecting light from said dosimeter;

e) processing said detected light to construct a three dimensional image; and

rotating said dosimeter and repeating steps ~~d~~c, ~~e~~d, and ~~f~~e.

46. (Currently amended) The method of claim ~~43~~ 45 further comprising the step of:

c. calculating an amount and distribution of radiation received by the dosimeter from said analyzed three dimensional data.

47. (Currently amended) The method of claim ~~44~~ 45 wherein an absolute dose is

calculated in said step c.

48. (Currently amended) ~~The method of claim 38~~ A method for detecting radiation comprising the steps of;

a. subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter, and

b. analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeters using a tomographic process wherein the radiation emits from a radionuclide.

49. (Original) The method of claim 48 wherein the radionuclide is selected from the group consisting of radioactive isotopes of iodine, strontium, samarium, yttrium, ruthenium, palladium, cobalt and iridium.

50. (Currently amended) A system for detecting radiation comprising:

means for subjecting a shaped solid dosimeter to a radiation field said dosimeter ~~is fabricated from~~ comprises a transparent or translucent polymer formed into a three-dimensional shape, ~~and~~ one or more reporter ~~molecules~~ compounds and one or more activators dispersed within said ~~device~~ dosimeter;

means for analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter.

51. (Original) The system of claim 50 wherein the radiation is ionizing radiation.

52. (Original) The system of claim 50 wherein the radiation is x-ray radiation.

53. (Original) The system of claim 50 wherein the radiation is neutron radiation.

54. (Original) The system of claim 50 wherein said means for analyzing comprises spectrophotometric analysis.

55. (Currently amended) The system of claim ~~54~~ 50 ~~when~~ wherein said means for analyzing comprises a tomographic process.

56. (Original) The system of claim 55 wherein said tomographic process comprises;

means for illuminating said dosimeter with a light source;

means for detecting light from said dosimeter; and

means for processing said detected light to construct a three dimensional image.

57. (Original) The system of claim 56 wherein said means for detecting comprises a Charged Coupled Device (CCD), Complementary Metal-Oxide Semiconductor (CMOS) sensor camera or digital camera.

58. (Currently amended) ~~The system of claim 50 further comprising~~ A system for detecting radiation comprising:

means for subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter;

means for analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter; and

means for rotating said dosimeter.

59. (Original) The system of claim 50 further comprising means for calculating an amount and distribution of radiation received by the dosimeter from said analyzed three dimensional data.

60. (Currently amended) The system of claim ~~57~~ 59 wherein said means for calculating calculates an absolute dose.

61. (Currently amended) ~~The system of claim 50~~ A system for detecting radiation comprising:

means for subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer and one or more reporter compounds dispersed within said dosimeter;

means for analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter wherein the radiation emits from a radionuclide.

62. (Currently amended) The system of claim ~~62~~ 61 wherein the radionuclide is selected from the group consisting of radioactive isotopes of iodine, strontium, samarium, yttrium, ruthenium, palladium, cobalt, and iridium.

63. (Original) The system of claim 50 further comprising means for erasing said

three dimensional data from said dosimeter.

64. (Currently amended) A method in pretreatment planning in Conformal Radiation Therapy ~~using~~ comprising the steps of:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter;

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using said three-dimensional data pretreatment planning in Conformal Radiation Therapy~~said system of claim 50~~.

65. (Currently amended) A method of pretreatment planning in Intensity Modulated Radiation Therapy (IMRT) comprising the steps of:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter; and

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using ~~said system of claim 50.~~ said three-dimensional data in pretreatment planning in IMRT.

~~65~~66. (Canceled).

~~66~~67. (Currently amended) A method of pretreatment planning in Boron Neutron Capture Therapy (BCNT) comprising the ~~step~~ steps of ~~using the~~:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter; and

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using said three-dimensional data in pretreatment planning in Boron Neutron Capture Therapy (BNCT) ~~system of claim 50~~.

~~67~~68. (Currently amended) A method of pretreatment planning in Brachytherapy comprising the ~~step~~ steps of ~~using the~~:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a

transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter; and

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using said three-dimensional data pretreatment planning in Boron Neutron Capture Therapy (BNCT)~~system of claim 50~~.

~~68~~69. (Currently amended) A method of pretreatment planning in Permanent Seed Brachytherapy comprising the ~~step~~ steps of ~~using the~~:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter; and

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using said three-dimensional data pretreatment planning in Permanent Seed Brachytherapy~~system of claim 50~~.

~~69~~70. (Currently amended) A method of pretreatment planning in High Dose Rate Temporary (HDR) Brachytherapy comprising the ~~step~~ steps of ~~using the~~:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter; and

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using said three-dimensional data pretreatment planning in High Dose Rate Temporary (HDR) Brachytherapy ~~system of claim 50~~.

~~70~~71. (Currently amended) A method of pretreatment planning in Vascular Brachytherapy comprising the ~~step~~ steps of ~~using the~~:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter; and

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using said three-dimensional data pretreatment planning in Vascular Brachytherapy ~~system of claim 50~~.

~~71~~72. (Currently amended) A method of pretreatment planning in HDR Brachytherapy of breast cancer, prostate cancer, or lung cancer comprising the ~~step~~ steps of ~~using the~~:

subjecting a shaped solid dosimeter to a radiation field, said dosimeter comprises a transparent or translucent polymer formed into a three-dimensional shape, one or more reporter compounds, and one or more activators dispersed within said dosimeter; and

analyzing three dimensional data from said dosimeter exposed to said radiation field by evaluating optical properties of said dosimeter using said three-dimensional data pretreatment planning in HDR Brachytherapy~~system of claim 50~~.

73. (New) A shaped solid dosimeter device comprising a transparent or translucent polymer and one or more reporter compounds dispersed within said device, said translucent polymer formed into a three-dimensional shape to provide a three-dimensional dosimetric map.

74. (New) The system of claim 58 further comprising means for erasing said three dimensional data from said dosimeter.